A better mousetrap - More Accurate Crop Damage Assessment in Lake Erie Grapes

Project Investigators

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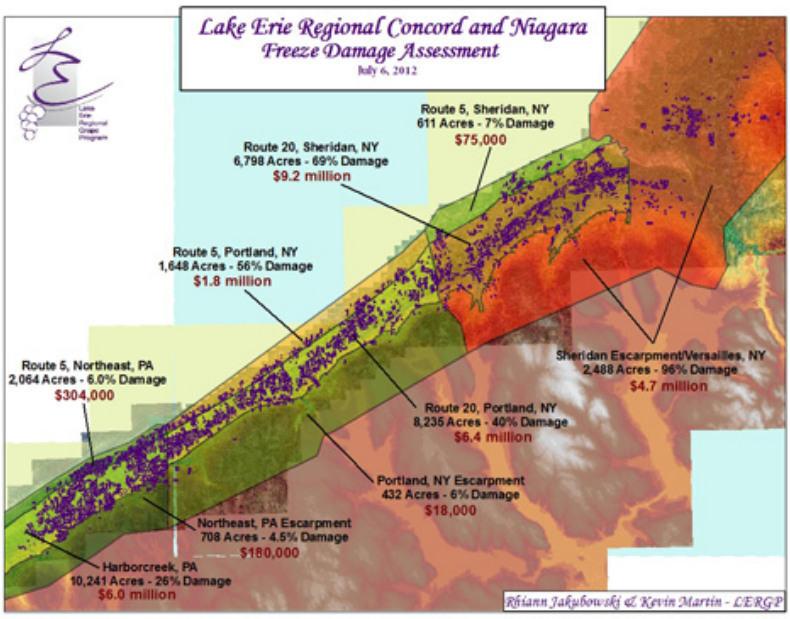
Impact "Nugget"

A collaborative effort between extension and research staff of the Lake Erie Regional Grape Program (LERGP) at the Cornell Lake Erie Research and Extension Laboratory (CLEREL) and area growers provided the information needed to more accurately predict freeze damage for Concord grape production in the Lake Erie region. Combining visual inspections of nine vineyard sites to determine damage levels with GIS mapping of the Lake Erie vineyards to identify sites with similar soil and elevation characteristics allowed the Lake Erie Regional Grape Program to quickly develop and update maps showing potential damage levels by sub-regions in Chautauqua, Cattaraugus and Niagara Counties in New York and Erie County in Pennsylvania.

Issues/Needs and Audiences

While the Lake Erie region is well suited for its 30,000 acres of Concord grape production, Mother Nature has made it more challenging of late as spring frost and freeze events have occurred with increased frequency. Growers have struggled in the past to provide crop insurance adjusters good estimates of damage for their vineyard operations after a freeze/frost event. These damage estimates are also essential to growers to assist them in determining what production practices (such as pest management applications) should be continued, modified or eliminated in the upcoming growing season.

Extension Responses



The LERGP extension team collaborated with Dr. Terry Bates, research viticulturalist and Director of CLEREL, to develop a better way of assessing damage across the Lake Erie region. Dr. Bates currently has a research project involving 9 sites spread across the grape belt that represent the three sub-regions of the belt according to elevation; lakeshore, lake plain and escarpment as well as geographical location from east to west across the belt. Standardized pruning levels and viticultural practices were

applied across all nine sites. This provided the opportunity to evaluate and compare damage by location without having to take into consideration individual grower practices. Each site was located in close proximity to a weather instrument providing data to the Network for Environment and Weather Applications (NEWA). This allowed for the collection of low temperature information on an hourly basis for each of the sites. Damage assessments were conducted to determine; primary bud loss, secondary bud loss, number of clusters at bloom, and number of berries after berry set. The damage information from each site was extrapolated out to vineyards of similar soil and elevation to determine areas of damage similar to each of the nine sites using GIS maps previously developed by the LERGP. Damage maps were updated throughout the growing season as new data became available.

Accomplishments and Impacts

Using GIS acreage maps, a map showing the value of potential damage for each of the nine sub regions of the Lake Erie grape belt could be developed. The ability to collect and disseminate research-based damage information was critical when dealing with media (LERGP became the source of damage information), FSA, processors and growers. State and local legislators were kept apprised of the damage potential through the delivery of updated maps. Crop insurance companies and adjusters worked with LERGP and used the maps to assist them in their damage assessment. Growers were able to obtain GIS maps from LERGP showing acreage and elevation to assist them in providing their crop insurance adjusters a visual means of determining potential damage areas (low spots). Quote from Kevin Martin, Business Management Educator for LERGP. “Because of the maps, it is the first time I have not been misquoted when working with the media.”

Collaborators

Grape growers in Chautauqua, Cattaraugus and Niagara Counties in New York and Erie County, Pennsylvania. Network for Environment and Weather Applications (NEWA)

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